Effects of feeding male and female broiler chickens on low-protein diets fortified with different dietary glycine levels under the hot and humid tropical climate

ABSTRACT

This study was conducted to evaluate the effect of sex and level of glycine (Gly) fortification to low-protein diets on growth performance, selected serum metabolites, carcass yield and litter characteristics in broiler chickens under tropical climate. Day-old male (n = 400) and female (n = 400) broiler chicks were assigned to five isocaloric diets (positive control, PC; negative control, NC; and more three diets obtained by fortifying NC diet with higher Gly concentrations). No significant diet × sex interaction was observed for all the parameters measured. Comapered to NC group, weight gain (WG) significantly increased (p<.0001) by feeding Gly fortified low-CP diets throughout the experiment; however, WG and feed intake (FI) of birds fed NC or NC + Gly diets were significantly lower (p<.0001) compared to PC group. During the overall period, fortification of NC diet with Gly significantly improved (p<.0001) the feed conversion ratio (FCR) compared to NC group, and resulted in FCR similar to those birds fed the PC diet. Diet effect was significant (p<.0001) for performance parameters, proportional liver and abdominal fat weights, serum triglycerides (TG) and uric acid (UA) and litter moisture and nitrogen contents; with no Gly level effect (linear and quadratic, p > 0.05). The sex effect was significant for performance parameters, abdominal fat, and littersô moisture and nitrogen contents. In conclusion, it is likely that additional Gly fortification to low-CP diets under tropical climate may have a better effect on broiler chickens after the starter phase. Moreover, feeding Gly fortified low-CP diets may improve the FCR and reduce the nitrogen excretion.

Keyword: Glycine; Low-protein diet; Broiler chickens; Tropical climate